SECTION 1

INTRODUCTION

The riparian and wetland communities of southwestern Idaho are the least known of anywhere in the state, in terms of classification of plant associations for management and biodiversity conservation purposes. Classifications done elsewhere in Idaho, as well as in adjacent Oregon, Utah, Wyoming, Montana, and Nevada, may be useful for identifying riparian types in southwestern Idaho, but their usefulness is only now being tested. While many types described in these classifications are applicable, unique environmental and physical conditions contribute to the formation of undescribed types that may be endemic to the area.

This project is a preliminary step in filling this large gap in our knowledge of riparian ecosystems in Idaho. It is not a community classification project, but an effort to inventory the community diversity of wetlands and riparian areas considered to be in high ecological condition in southwestern Idaho, focusing on the Lower Snake River District (LSRD) of the BLM. We have received funding to continue this project in 1998. So, stay tuned.

There are several implications of the project for management of riparian systems by the BLM:

1. Currently, BLM managers in southwestern Idaho have no useful communication tool (*i.e.*, standardized classification) to compare successional states of different watersheds, to characterize reference sites in high ecological quality, to understand site potentials for "Proper Functioning Condition" assessments, to communicate with managers in surrounding areas, and to set ecological goals for riparian and watershed health.

2. Identification of a system of reasonably well-understood reference areas on the LSRD, from which riparian management guidelines can be developed. Currently this is lacking or, at best, inadequate. The BLM has established many Areas of Critical Environmental Concern (ACEC) and Research Natural Areas (RNA) throughout the state, in general, and the LSRD, in particular. These sites were primarily established to protect biotic elements, including riparian and wetland communities. Another purpose of these special designations is as ecological reference areas (Federal Committee on Ecological Reserves 1977; Johnson *et al.* 1984), a use that few managers in Idaho have taken advantage of. In addition there are many other potential reference sites, such as exclosures, that can be used as baselines to assess rangeland, including riparian, management (Laycock 1975; Turner *et al.* 1980; Allen 1983).

3. Many streams on BLM land in southwestern Idaho are listed as "water quality limited" streams by the EPA. This project will aid the BLM to raise the water quality of these streams because on BLM land, water quality management generally equals riparian management.

4. This assessment will aid the BLM's "coarse filter" biodiversity conservation efforts (USDI-BLM 1992), that is, conservation of the community and ecosystem level of biological

organization (Noss 1990; Grossman *et al.* 1994). By contrast, long-standing programs to conserve special status plants and animals take the complementary "fine filter" approach to biodiversity conservation and are aimed primarily at the lower levels of organization (genes, populations, and species). See Rust (1997) for an expanded review of community concepts and their application for biodiversity conservation.

The purpose of this project is to assess the diversity of wetland and riparian communities of the LSRD through field inventory and sampling, using ACECs, RNAs, exclosures, and other potential reference areas as the primary inventory sites. From this inventory, we will prepare a preliminary guide to the riparian types of southwestern Idaho, which will include a key to their identification and supporting descriptive material for each community. The guide can be expanded upon as new information becomes available.

The project will help fill in gaps in our knowledge of riparian and wetland communities in Idaho, and will be the low-elevation compliment to the inventory being done by Boise Cascade in mountainous areas of southwestern Idaho (Carolyn Mehl, Boise Cascade Corp., Boise, pers. comm., 1997). It also compliments inventories being conducted by the Conservation Data Center (CDC) throughout the rest of the state (*e.g.*, Jankovsky-Jones 1995; 1996; 1997a; 1997b; 1997c).

METHODS

Field Methods

The first step was to choose the sites for inventory during 1997. I chose 14 sites from throughout southwestern Idaho because of their status as an established or proposed RNA and/or ACEC or as a private conservation area owned by The Nature Conservancy (TNC). These study sites are discussed in more detail in the next section.

In preparation for field work, I compiled all the classifications from surrounding areas (Table 1). These were the starting points for understanding the riparian and wetland diversity patterns in the study area. I also compiled as much information as was readily available about the protected area and surrounding land, especially as it related to riparian ecosystems.

During the field inventory, information was collected using a standard set of CDC forms (Appendix 1) for both the site and the individual community types:

Site Information - For the site as a whole, we used the Site Survey Form for documenting information on site location, occurrences of communities and rare species, site description, key environmental factors, biodiversity significance, and various management needs, among other things. See the Site Survey Form in Appendix 1 for more details.

Table 1. Riparian and wetland classifications from Idaho and surrounding states used as references in this study.

Reference	State	Area Covered
Tuhy 1981	Idaho	Sawtooth Valley
Tuhy and Jensen 1982	Idaho	upper main and Middle Fork Salmon River
Mutz and Queiroz 1983	Idaho	Centennial Mountains; South Fork Salmon River
Hall and Hansen 1997	Idaho	lower elevations of southeastern Idaho
Miller 1976	Idaho	Hells Canyon and Salmon River canyon
Youngblood *et al.* 1985	Idaho & Wyoming	mountains of eastern Idaho and adjacent Wyoming
Padgett *et al.* 1989	Idaho & Utah	mountains of southeastern Idaho and Utah
Cole 1995	Idaho	Hagerman Valley, Snake River canyon
Kovalchick 1987	Oregon	mostly eastern slope of Cascades, central Oregon
Evenden 1989	Oregon	Trout Creek Mountains
Crowe and Clausnitzer 1997	Oregon	Blue Mountains
Hansen *et al.* 1995	Montana	statewide
Manning and Padgett 1995	Nevada	mountains throughout Nevada
Weixelman *et al.* 1996	Nevada	mountains of central Nevada

Community Types - All riparian communities were mapped on USGS 7.5' topographic quads. For each community in the site, one of two forms was used to document its occurrence. Most communities were sampled using a plot to document the community's composition, structure, and environmental conditions. I used standard ecological sampling techniques used by all Natural Heritage and Conservation Data Centers in the western U.S. (Bourgeron *et al.* 1992). Forms used for these plots correspond to Form II (Community Survey Form) and Form III (Ocular Plant Species Data) in Appendix 1. In a few cases I used an abbreviated form, called the Idaho Community Observation Form (Appendix 1) to document types where the composition and structure is well known in Idaho or when I was running out of time. In a few sites, Helen Fisher of the BLM accompanied me and did soils descriptions for some plots. Otherwise I collected only general soils information.

Site and Community Data Bases

Field data were entered into the Biological and Conservation Data (BCD) system at the CDC. The three modules of the BCD described below were the primary ones used for managing and reporting site and community information.

Site Basic Record (SBR) - This module is used to manage information about important biodiversity conservation sites in the state. The Site Survey Form, mentioned above, was developed to mirror the SBR. Numerous fields are contained in a SBR and are included under such headings as Location, Site Description, Site Design (including boundary description), Site Significance (ratings for biodiversity significance, protection urgency, management urgency, etc.), Protection, Stewardship, and References. Also, all community and rare species occurrences are automatically popped into the record via a relational feature from the Element Occurrence module (see below). In addition to the computer record, the site boundaries are mapped and digitized and a manual (hard copy) file is maintained for each site.

Element Occurrence Record (EOR) - This is the same module used to report rare species occurrences. Both species and communities are "elements" of biodiversity, hence the generic name Element Occurrence Record. Information for each occurrence, in this case a community occurrence, is kept on map, computer, and manual files. The computer file contains numerous fields under such headings as Location, Status (quality, dates of observation, etc.), Description, Protection, Ownership, and Documentation (sources of information about an occurrence). As mentioned above, this module is related to the SBR.

Community Characterization Abstract (CCA) - CCAs provide a short, concise account of the nomenclature, classification, environmental and functional relationships, vegetation structure and composition, and conservation status for a particular natural community. This information is compiled from all available published and unpublished sources, as well as the personal knowledge and field data collected by CDC biologists. Coupled with the statewide wetland and riparian community classifications and the occurrence data bases maintained by the CDC, CCAs are a valuable resource for developing conceptual and quantitative ecological models for individual community types or suites of community types on a floodplain. Our long-term goal is to populate the CCA data base for all wetland and riparian communities in Idaho and produce a comprehensive reference manual for biologists and managers. In the near term, CCAs can be populated for regions of the state and "mini-guides" generated for specific watersheds or similar areas.

RIPARIAN AND WETLAND REFERENCE AREAS

The 14 study sites lie in four counties in southwestern Idaho (Figure 1; Table 2) and span the latitudinal gradient of BLM land on the LSRD. Summer Creek lies near the northernmost BLM land in the Cascade Resource Area at nearly 45° N latitude, and Triplet Butte lies near the

southernmost portion of the Bruneau Resource Area, just 1.5 miles north of the Nevada border at 42° N latitude. This is a north-to-south distance of about 210 miles.

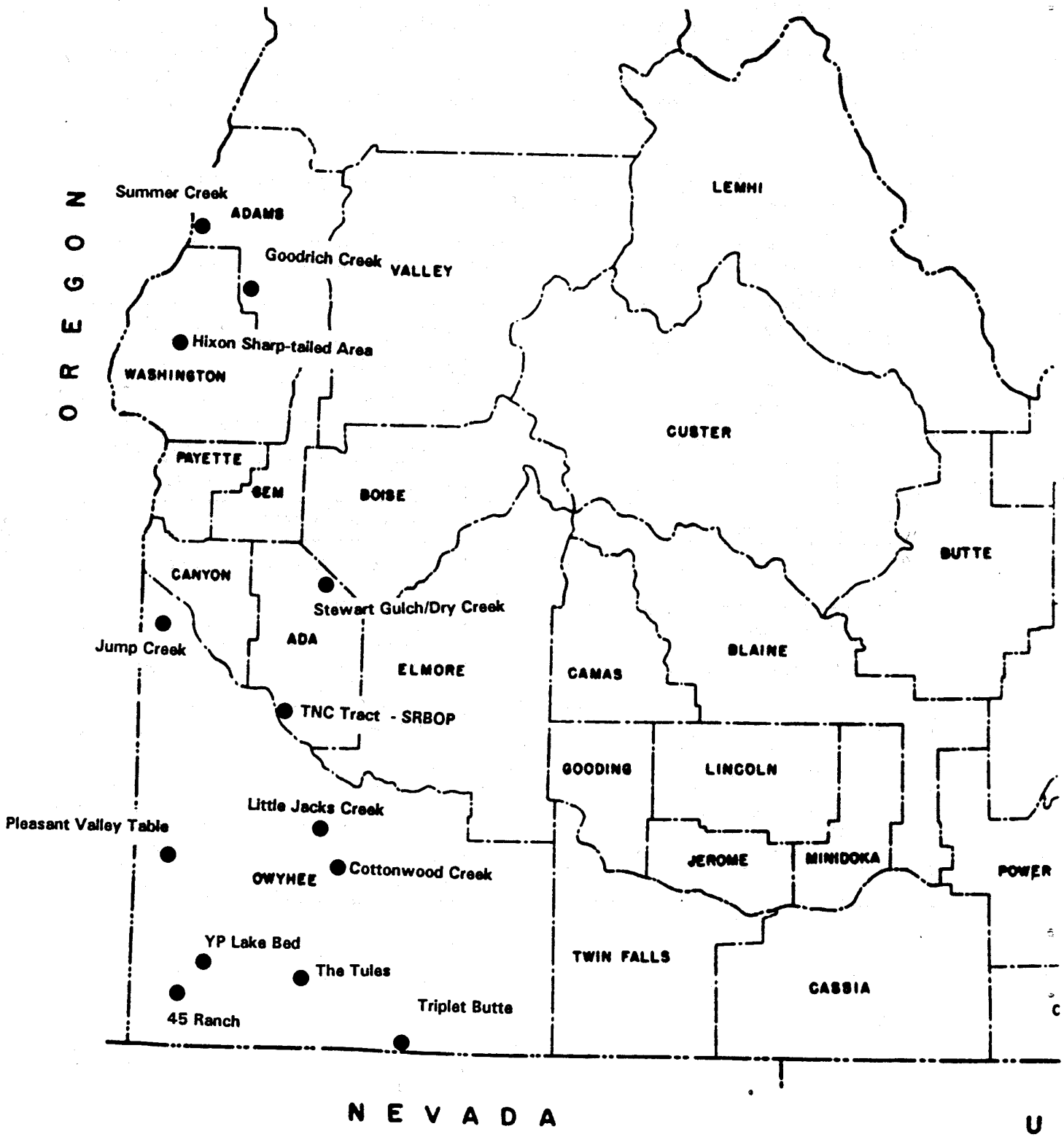
The four northernmost sites, Summer Creek, Goodrich Creek, Hixon HMP Area, and Dry Creek, lie in Bailey's ecoregional Province M332, named the Middle Rocky Mountain Steppe-Coniferous Forest-Alpine Meadow Province. Within this province, the former three sites lie within the Blue Mountains Section (M332G) and have basalt substrates, while the latter occurs in the Idaho Batholith Section (M332A), which has a granitic substrate. The remaining sites all lie in Province 342, the Intermountain Semi-desert Province, and all within Owyhee Uplands Section (342C), which in this ecoregional classification includes the western Snake River Plain (McNab and Avers 1994).

The SBRs for all but the Dry Creek site are found in Appendix 2 and give overviews of the terrestrial and riparian elements occurring at each site.

Table 2. Inventory sites in southwestern Idaho for riparian and wetlands communities. Sites are arranged from north to south.

Site No.	Site Name	Status	County
214	Summer Creek	proposed RNA/ACEC	Adams
107	Goodrich Creek	RNA/ACEC	Adams
123	Hixon Sharp-tailed Grouse HMP Area	ACEC, TNC preserve	Washington
238	Stewart Gulch (Dry Creek/Boise Front)	ACEC	Ada
132	Jump Creek	proposed RNA/ACEC	Owyhee
378	TNC Tract - Snake River Birds of Prey	TNC preserve; National Conservation Area	Ada
145	Little Jacks Creek	RNA	Owyhee
1594	Pleasant Valley Table/North Fork Owyhee River	proposed RNA/ACEC	Owyhee
69	Cottonwood Creek	RNA/ACEC	Owyhee
371	YP Lake Bed	unprotected	Owyhee
258	The Tules	RNA/ACEC	Owyhee
373	45 Ranch	TNC Preserve	Owyhee
256	Triplet Butte	RNA/ACEC	Owyhee

Figure 1. Location of reference areas used in riparian and wetland community type inventory.



RIPARIAN AND WETLAND FLORA

Although this was not a primary objective of this project, I made a list of all vascular plant species encountered in the riparian, wetland and aquatic zones of the 14 study sites. Because of time/money constraints, I collected no voucher specimens, but nearly all species were identified using a flora. I included on the list only species that I encountered in riparian, wetland and aquatic communities. Keep in mind that the riparian zone includes a broad moisture gradient and, therefore, is habitat to numerous species that are not considered wetland indicators. It is not uncommon, for instance, to see rubber rabbitbrush (*Chrysothamnus nauseosus*) growing beneath a late-successional cottonwood stand or monardella (*Monardella odoratissima*) occurring on the stream-bed gravels of an ephemeral wash.

The checklist appears in Appendix 3, ordered by major plant group and family. The list contains 356 species occurring in 62 families. Not surprisingly, the sunflower and grass families are the most species-rich. What was surprising was how few willows (seven species) and sedges (15 species) were encountered. For a study area that spanned three degrees of latitude, I expected these two genera to be richer in species. As more sites are sampled, especially at higher elevations, additional species in these two primarily boreal groups will probably be encountered.

Because the study area is so large, to help field personnel I reordered the list by life form and arranged them in a table indicating the study sites where they were encountered. This matrix appears in Appendix 4.

I encountered four rare plant species in this inventory, *Lepidium davisii, Teucrium canadense, Camassia cusickii,* and *Haplopappus uniflorus* var. *howellii*. Rare plant observation forms were filled out and the occurrences were entered into the CDC data base. See Table 3 for their distribution and habitats at the study sites.

Table 3. Distribution and habitats of the rare plant species encountered in 1997.

Species Name	Site Name	Occ. #	Community Type and Comments
Teucrium canadense	45 Ranch	006	Ecotone between *Scirpus pungens* and upland
	The Tules	007	*Carex sheldonii*
	TNC Tract - SRBOP	008	Ecotone between *Scirpus acutus* and *Sarcobatus vermiculatus/Distichilis stricta*
Camassia cusickii	Summer Creek	009	*Camassia cusickii* seep; *Alnus rhombifolia/ Phildelphus lewisii*
Lepidium davisii	45 Ranch	099	*Lepidium davisii* vernal pool
Haplopappus uniflorus var. *howellii*	45 Ranch	002	*Artemisia ludoviciana*; ephemeral bed of Little Owyhee River
	Pleasant Valley Table	003	*Danthonia californica* ephemeral wash

RIPARIAN AND WETLAND VEGETATION

One of the main outcomes of the 1997 inventory was that, at least at my study sites, existing riparian and wetland classifications from surrounding areas (Table 1) for the most part do not work at low elevations in southwestern Idaho. I encountered what I have tentatively identified as 34 riparian and wetland community types at the 14 reference sites. I say tentative because most have never been described before and I was only able to sample one or two stands during this study. This is not enough sampling to confidently classify and characterize these stands, but it was a reasonable first step in documenting the community diversity at the study sites, and by extrapolation, other areas with similar environmental and physical conditions in southwestern Idaho.

Below is a list of the community types encountered with a comment regarding my confidence in their recognition. Community Characterization Abstracts have been prepared for the 15 community types I believe have high classification certainty, due to higher sampling effort, personal knowledge of it's distribution, and/or description from surrounding regions. The CCAs appear in Section 2. The 19 types for which there is low classification certainty at this time are called the "Tentative Community Types." Short descriptions of these appear in Section 2 also. More inventory and sampling are needed to determine their repeatability and more fully characterize compositional and structural variation. The second year of this project in 1998 may shed more light on these types.

BLACK COTTONWOOD SERIES

Populus trichocarpa/Salix lasiandra - Confident (Crowe and Clausnitzer 1997.
Populus trichocarpa/Symphoricarpos albus - Confident (Crowe and Clausnitzer 1997).

WHITE ALDER SERIES

Alnus rhombifolia/Cornus sericea - Tentative; two plots.
Alnus rhombifolia/Philadelphus lewisii - Confident (Miller 1976).

WATER BIRCH SERIES

Betula occidentalis/Philadelphus lewisii - Tentative; one plot.
Betula occidentalis/Mesic forb - Confident (Manning and Padgett 1995).
Betula occidentalis/Poa pratensis - Confident (Manning and Padgett 1995).

CHOKECHERRY SERIES

Prunus virginiana - Tentative riparian cover type; one plot.
Prunus virginiana/Elymus glaucus - Tentative; two plots.

WILLOW TYPES

Salix exigua/Barren - Confident (Padgett *et al.* 1989).
Salix exigua/Mesic graminoid - Confident (Padgett *et al.* 1989).
Salix lasiandra/Cornus sericea - Tentative; one plot.
Salix lasiolepis cover type - Tentative riparian cover type; three plots.
Salix lutea - Tentative; one plot.

MISCELLANEOUS SHRUB TYPES

Alnus incana/Cornus sericea - Confident (Padgett *et al.* 1989; and others).
Artemisia tridentata var. *tridentata/Elymus cinereus* - Confident (Hironaka *et al.* 1983).
Cornus sericea - Confident (Crowe and Clausnitzer 1997 and others).
Crataegus douglasii/Rosa woodsii - Tentative; one plot.
Juniperus scopulorum/Mesic forb - Tentative.
Philadelphus lewisii - Tentative; one plot.
Sarcobatus vermiculatus/Distichilis stricta - Confident (Daubenmire 1970).

GRAMINOID TYPES

Carex sheldonii - Tentative; one plot.
Carex utriculata - Confident.
Scirpus acutus - Confident.
Scirpus pallidus - Tentative; one plot.
Scirpus pungens - Confident (Hansen *et al.* 1995).

FORB TYPES

Camassia cusickii seep - Confident (Johnson and Simon 1987).

EPHEMERAL WETLAND TYPES

Artemisia cana/Dry graminoid - Tentative; one plot.
Artemisia cana/Muhlenbergia richardsonis - Tentative (Hironaka *et al.* 1983).
Artemisia ludoviciana - Tentative; one plot.
Artemisia papposa ephemeral wetland - Tentative; one plot.
Danthonia californica ephemeral wetland - Tentative; one plot.
Eleocharis palustris vernal pool - Tentative; one plot.
Lepidium davisii vernal pool - Tentative; one plot.

Table 4 summarizes the riparian and wetland community types found at the study sites, indicating their occurrence number in the our EOR data base, along with the documentation of that occurrence, either from a plot or community observation form. Plot forms are archived in the Plant and Community Monitoring File at the CDC.

Table 4. Community occurrences in the 14 study sites in southwestern Idaho. "Occ. #" refers to the occurrence number in the CDC data base.

Site Name	Riparian and Wetland Community Types	Occ. #	Plot No.
Summer Creek	*Camassia cusickii* seep	001	observ. form
	Alnus rhombifolia/Philadelphus lewisii	002	observ. form
Goodrich Creek	*Betula occidentalis*/Mesic forb	003	97RM001
	Populus trichocarpa/ Symphoricarpos albus	003	97RM002
	Populus trichocarpa/Salix lasiandra	001	97RM003
Hixon Sharp-tailed Grouse HMP Area	*Alnus rhombifolia/Cornus sericea*	001	97RM030 97RM031
	Alnus incana/Cornus sericea	008	97RM032
	Scirpus pallidus	001	97RM033
	Salix lasiolepis cover type	003	97RM034
	Crataegus douglasii/Rosa woodsii	006	96MM001
Stewart Gulch (Dry Creek/Boise Front)	*Salix lutea*	003	97RM005
	Betula occidentalis/Poa pratensis	001	97RM004
Jump Creek	*Betula occidentalis*/Mesic forb	004	97RM011
	Betula occidentalis/Philadelphus lewisii	001	97RM012
	Philadelphus lewisii	001	97RM013
	Salix lasiolepis cover type	002	97RM014
TNC Tract - Snake River Birds of Prey	*Scirpus acutus*	031	observ. form
	Sarcobatus vermiculatus/Distichilis stricta	001	97RM020
	Salix exigua/Barren	015	97RM021
Little Jacks Creek	*Prunus virginiana/Elymus glaucus*	001	97RM015 97RM017
	Salix lasiolepis cover type	001	97RM016
	Cornus sericea	015	observ. form
Pleasant Valley Table/North Fork Owyhee River	*Artemisia papposa* ephemeral wetland	001	97RM041
	Danthonia californica ephemeral wetland	001	97RM042

Table 4. Continued.			
Site Name	Riparian and Wetland Community Types	Occ. #	Plot No.
Pleasant Valley Table cont'd	*Artemisia cana*/Dry graminoid	001	97RM043
	Salix lasiandra/Cornus sericea	003	97RM044
Cottonwood Creek	*Prunus virginiana*	002	97RM010
	Cornus sericea	013	97RM009
YP Lake Bed	*Eleocharis palustris* vernal pool	001	97RM025
	Artemisia cana/Muhlenbergia richardsonis	001	97RM026
The Tules	*Scirpus acutus*	003	observ. form
	Carex sheldonii	001	97RM028
	Carex utriculata (C. rostrata)	092	observ. form
	Salix exigua/Mesic graminoid	010	97RM029
45 Ranch	*Artemisia ludoviciana*	003	97RM022
	Artemisia tridentata tridentata/ Elymus cinereus	006	observation form
	Scirpus pungens	001	97RM023
	Lepidium davisii vernal pool	001	97RM024
Triplet Butte	*Juniperus scopulorum*/Mesic forb	001	observ. form
	Cornus sericea	014	97RM019
	Salix exigua/Mesic graminoid	009	97RM018

CONCLUSIONS

Although modest progress was made in our understanding of the distribution and abundance of riparian communities during 1997, only a small set of riparian conditions were sampled in the 14 reference areas visited. Many physical, biological, and geographic gradients are present on the LSRD, most of which are little understood. We are especially lacking knowledge of broader-scale physical processes responsible for maintaining riparian community diveristy in the region. This community inventory project will continue during 1998 and build upon the 1997 work as the next step in filling this large gap in our knowledge of riparian and wetland ecosystems in Idaho.